Exhibit R-2, RDT&E Budget Item Justification		Date: February 1999
APPROPRIATION/BUDGET ACTIVITY RDT&E /BA 5	R-1 ITEM NOMENCLATURE Ship Contract Design/Live Fire T&E Program Element (PE) Name and No. PE 0604567N	

COST ($ in Millions)	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	Cost to Complete	Total Cost
Total P.E. Cost	35.098	45.263	61.135	69.531	48.320	48.047	36.189	32.428	Continuing	Continuing
Ship Contract Design/S1803	0	2.782	24.992	29.042	20.613	18.663	5.692	0	Continuing	Continuing
LHA Replacement/S2465	0	0	0.008	0.012	0.016	0.021	0.026	0.030	0	41.264
Carrier Contract Design/42301	16.453	38.215	34.866	39.248	26.358	24.649	26.539	28.386	Continuing	Continuing
CVN77 Adv. Technology/S2431	16.496	0	0	0	0	0	0	0	0	16.496
Ship Specifications/S2197	2.149	1.273	1.269	1.229	1.333	3.852	3.932	4.012	Continuing	Continuing
Live Fire Test & Evaluation/S2198	0	0	0	0	0	.862	0	0	Continuing	Continuing
Smart Propulsor Product Model/32646	0	2.993	0	0	0	0	0	0	TBD	TBD
Quantity of RDT&E Articles & cost	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

A. Mission Description and Budget Item Justification: This Program Element (PE) directly supports the Navy's Shipbuilding Plan by providing for the development of all post Feasibility Study (Usually after Milestone I) engineering, programmatic and acquisition documentation. This includes ship specifications (including performance specifications) and contractual documentation associated with acquisition of Navy ships. This line also supports the Congressionally mandated Live Fire Test and Evaluation program for new ship designs.

Contract Design has traditionally been the engineering development of the technical and contractual definition of the ship design (including ship specifications and drawings) to a level of detail sufficient for prospective shipbuilders to make a sound estimate of the construction cost and schedule. Additionally, the contract design package developed under this PE has provided the technical baseline from which the Navy selects the shipbuilder who then develops the detail design package required to support the construction and eventual delivery of the ship. This PE also supports the development of design methodologies which facilitate and optimize the transition from ship design documents to efficient production of new ships and ship conversions, and supports engineering planning and ship affordability studies.

Under Acquisition Reform for new design ships, traditional distinct phasing of the design process has been replaced with a continuous concurrent engineering Integrated Product and Process Development (IPPD) process extending through and after contract award. This serves to maintain the focus of multi-discipline teams consisting of the government, shipbuilder, system programs, and suppliers. Government/Industry Integrated Product Team(s) (IPTs) will utilize the IPPD process to develop the design in an Integrated Product and Data Environment (IPDE). The design approach is part of an acquisition strategy that is based on commercial practices and incorporates a phased technical definition. This may involve continuing efforts (where Milestone I has not occurred, and/or after Milestone II) in those cases where IPTs would be disrupted after Feasibility Study conclusion and/or award of a shipbuilding contract.

Smart Propulsor Product Model (SPPM) will estimate propulsor design, manufacturing and life cycle maintenance costs. The SPPM is to enable innovative hull form – propulsor - appendage alternatives to be considered for future ships with independent estimates (estimates from the propulsor manufacturer) available to the designer/design manager during design.

Exhibit R-2, RDT&E Budget Item Justification		Date: February 1999
APPROPRIATION/BUDGET ACTIVITY RDT&E /BA 5	R-1 ITEM NOMENCLATURE Program Element (PE) Name and No.	Ship Contract Design/Live Fire T&E PE 0604567N

B. Program Change Summary:

	FY 1998	FY 1999	FY 2000
FY 1999 President's Budget:	89.516	133.645	232.495
Appropriated Value:	92.713	136.717	
Adjustment to FY 1998/99 Appropriated Value/	-57.615	-91.454	
FY 1999 President's Budget:			-171.360
FY 2000 PRES Budget Submit:	35.098	45.263	61.135

Funding: FY98 adjustments due to Congressional undistributed (-$3.472), SBIR reduction (-$2.250), Federal Technology Transfer (-$0.002) , BTR (+$0.776) , DD1002 update(-$0.079) and DD 21 funding transfer to PE 0604300N (-$52.588).

FY 99 adjustments due to DD 21 transfer to PE 0604300N (-$87.541), ADC(X) funding transfer to PE 0603564N (-$5.928), new funding for Smart Propulsor Product Model (+$2.993) and misc adjustments (-$0.978).

FY 00 adjustments due to DD 21 transfer to PE 0604300N(-$130.362),Carrier adjustments (-$36.078), ADC(X) phasing (-$5.000) and misc. (+$0.080).

Schedule: Schedule changes will be identified in the R-2a exhibits.

Technical: Not Applicable.

Exhibit R-2a, RDT&E Project Justification		Date: February 1999
APPROPRIATION/BUDGET ACTIVITY RDT&E /BA 5	Program Element Name & No. Ship Contract Design/Live Fire T&E PE 0604567N	Project Name and Number. Ship Contract Design S1803

Cost ($ in Millions)	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	Cost to Complete	Total Cost
Project Cost	0	2.782	24.992	29.042	20.613	18.663	5.692	0	Continuing	Continuing
RDT&E Articles Qty	0	0	0	0	0	0	0	0	N/A	N/A

A. Mission Description and Budget Item Justification: This project supports development of all technical, programmatic and contractual documentation required after feasibility Studies for the acquisition of various ships in the Navy's Shipbuilding Program. The major effort is the engineering development of the technical and contractual definition of the ship's design (e.g. ship specifications and drawings), with sufficient details for the prospective shipbuilder to make a sound estimate of construction cost and schedule. It also serves as the technical definition from which the shipbuilder develops the shipbuilding detailed design and testing package required to build and test the ship.

FY 1998 ACCOMPLISHMENTS:

- N/A.

FY 1999 PLAN:

- (U) ($ 2.728) Commence CG Modernization Contract Design.
- (U) ($0.054) Portion of extramural program is reserved for Small Business Innovation Research assessment in accordance with 15 USC 638.

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FY 2000 PLAN:

- (U) ($ 9.287) Continue Planning Yard CG Modernization Contract Design.
- (U) ($ 2.200) Commence CG Government Team support for design products.
- (U) ($ 5.880) Commence T-ADC(X) Industry teams to support Engineering Design efforts.
- (U) ($ 7.000) Commence T-ADC(X) Government/Industry teams, develop RFP and support Source Selection.
- (U) ($0.625) Commence Trimaran Design.

Exhibit R-2a, RDT&E Project Justification		Date: February 1999
APPROPRIATION/BUDGET ACTIVITY RDT&E /BA 5	Program Element Name & No. Ship Contract Design/Live Fire T&E PE 0604567N	Project Name and Number. Ship Contract Design S1803

B. Other Program Funding Summary

	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Complete	Total Cost
PE 0603563N Ship Concept Advanced Design	5.264	7.077	5.318	5.675	6.495	6,595	6.677	6.863	Continuing	Continuing
PE 0603564N Ship Preliminary Design & Feasibility Studies	17.721	8.929	12.012	17.000	33.015	37.359	7.859	0	Continuing	Continuing

C. Acquisition Strategy:

For CG Modernization: The Planning Yard and NAVSEA team will perform required design studies. These studies will lead to the development of detail design/integration products for installation of CG work package to include TBM, Land Attack, AADC and Integrated Ship Controls. The modernization packages will be competed coastwide.

For JCC(X): The plan is to issue an RFP in FY 00 for Contract Design to two teams. Upon completion of Contract Design and evaluation by the Navy, a construction award will be issued in FY 04.

For T-ADC(X): The plan is for a FY 00 SCN ship award. Current plan is to issue RFP in March for general capability evaluation. Award Engineering Design contract to two or three teams in June 1999. Award detail design and construction contract to single team in June 2000 .

D. Schedule:

For CG Modernization: Awards are scheduled for FY 02-FY 06.

For T-ADC(X): Award is scheduled for FY 00/01/02.

For JCC(X) : Award is scheduled for FY04/05.

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Exhibit R-3, Project Cost Analysis		Date: February 1999
APPROPRIATION/BUDGET ACTIVITY RDT&E /BA 5	PROGRAM ELEMENT NAME AND NUMBER Ship Contract Design/Live Fire T&E PE 0604567N	PROJECT NAME AND NUMBER Ship Contract Design S1803

Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total Pys Cost	FY99 Cost	FY99 Award Date	FY00 Cost	FY00 Award Date			Cost To Complete	Total Cost	Target Value of Contract
Technology Assessments/Integration	WR	NSWC SSES Philadelphia, PA		0.000	N/A	0.120	10/99			Continuing	Cont.	Cont.
		NSWC, CD Carderock,MD		0.000	N/A	2.200	10/99			Continuing	Cont.	Cont.
Industry Team Design Studies	SS /CPAF	Ingalls Shipbuilding Pascagoula, MS	Cont.	2.500	Note 1	9.330	Note 1			Continuing	Cont.	Cont.
	TBD	TBD	Cont.	0.000	N/A	4.000	10/99			Continuing	Cont.	Cont.
Systems Engineering	C/CPFF	JJMA, Arlington, VA	Cont.	0.131	Note 1	5.650	Note 2			Continuing	Cont.	Cont.
	C/CPFF	Gibbs &Cox	Cont.	0.131	Note 1	0.450	Note 2			Continuing	Cont.	Cont.
	TBD	TBD	TBD	0.000	TBD	2.102	TBD			TBD	TBD	TBD
Subtotal Product Development			Cont.	2.762		23.852				Continuing	Cont.	Cont.
Remarks: Note 1. Existing contracts												
Contractor Engineering Support	GSA/FFP	Techmatics Arlington,VA	N/A	0.000	N/A	0.220	N/A			Cont.	Cont.	Cont.
Subtotal Support			Cont.	0.000		0.220				Continuing	Cont.	Cont.
Remarks:												

Cost Categories	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY99 Cost	FY99 Award Date	FY00 Cost	FY00 Award Date			Cost To Complete	Total Cost	Target Value of Contract

Exhibit R-3, Project Cost Analysis		Date: February 1999
APPROPRIATION/BUDGET ACTIVITY RDT&E /BA 5	PROGRAM ELEMENT NAME AND NUMBER Ship Contract Design/Live Fire T&E PE 0604567N	PROJECT NAME AND NUMBER Ship Contract Design S1803

Subtotal T&E	N/A	N/A	0	0	N/A	0	N/A			0	0	0
Remarks: T&E requirements for the designs are covered by S2198												
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY99 Cost	FY99 Award Date	FY00 Cost	FY00 Award Date			Cost To Complete	Total Cost	Target Value of Contract
Program Management Support	C/CPFF	ROH,Arlington, VA	Cont.	0.000	N/A	0.800	Note 1			Cont.	Cont.	Cont.
Travel	N/A	N/A	N/A	0.020	N/A	0.120	N/A			N/A	N/A	N/A
Subtotal Management			Cont..	0.020		0.920				Cont.	Cont.	Cont.
Remarks:												
Total Cost			Cont.	2.782		24.992				Cont.	Cont.	Cont.
Remarks:												

Exhibit R-2a,RDT&E Project Justification		Date: February 1999
APPROPRIATION/BUDGET ACTIVITY RDT&E /BA 5	PROGRAM ELEMENT NAME AND NUMBER Ship Contract Design/Live Fire T&E PE 0604567N	PROJECT NAME AND NUMBER Ship Specifications S2197

Cost ($ in Millions)	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	Cost to Complete	Total Cost
Project Cost	2.149	1.273	1.269	1.229	1.333	3.852	3.932	4.012	Continuing	Continuing
RDT&E Articles Qty	0	0	0	0	0	0	0	0	N/A	N/A

A. Mission Description and Budget Item Justification: This project funds the development, improvement, and update of NAVSEA cognizant acquisition specifications including integration of Federal and Military Specifications, handbooks, general specifications for Ships of the U.S. Navy and COTS equipment/systems into a Performance Based , bidable ship contract design acquisition package. These documents are required to reflect the latest technologies (i.e. open systems architecture for information and power systems), manufacturing techniques, environmental requirements, hazardous material reduction, safety and legal/Congressional requirements. Additionally, for FY 1998 only, this project funds the development, implementation and integration of computer-aided design/computer-aided manufacturing (CAD/CAM) systems to improve the transition from the Navy's Performance Specifications/Contract Design to the shipbuilder's detail design and construction.

FY 1998 ACCOMPLISHMENTS:

- (U) ($ 0.899) Continued development of CAD II analysis programs and program integration. Continued development of CAD II ship design systems and modeling techniques for application on DD 21 and T-ADC(X).
- (U) ($0.500) Continued to develop, improve and update NAVSEA cognizant acquisition specifications. Continued development of specification data base and Open Systems architecture.
- (U) ($0.750) Commenced development of Performance Based Ship Acquisition Specification Program

FY 1999 PLAN:

- (U) ($ 0.500) Continue to develop, improve and update NAVSEA cognizant acquisition specifications. Continue development of specification data base and Open Systems architecture.
- (U) ($0.742) Continue development of Performance Based Ship Acquisition Specification Program.
- (U) ($0.031) Portion of extramural program is reserved for Small Business Innovation Research assessment in accordance with 15 USC 638.

Exhibit R-2a,RDT&E Project Justification		Date: February 1999
APPROPRIATION/BUDGET ACTIVITY RDT&E /BA 5	PROGRAM ELEMENT NAME AND NUMBER Ship Contract Design/Live Fire T&E PE 0604567N	PROJECT NAME AND NUMBER Ship Specifications S2197

FY 2000 PLAN:

- ($0.500) Continue to develop, improve and update NAVSEA cognizant acquisition specifications. Continue development of specification data base and Open Systems architecture.
- ($0.769) Continue development of Performance Based Ship Acquisition Specification Program.

B. Other Program Funding Summary

	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Complete	Total Cost
PE 0603563N Ship Concept Advanced Design										
	5.264	7.077	5.318	5.675	6.495	6,595	6.677	6.863	Continuing	Continuing
PE 0603564N Ship Preliminary Design & Feasibility Studies										
	17.721	8.929	12.012	17.000	33.015	37.359	7.859	0	Continuing	Continuing

C. Acquisition Strategy: N/A

D. Schedule Profile: N/A

Exhibit R-3, Project Cost Analysis		Date: February 1999
APPROPRIATION/BUDGET ACTIVITY RDT&E /BA 5	PROGRAM ELEMENT NAME AND NUMBER Ship Contract Design/Live Fire T&E PE 0604567N	PROJECT NAME AND NUMBER Live Fire Test and Evaluation/S2198

Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY99 Cost	FY99 Award Date	FY00 Cost	FY00 Award Date			Cost To Complete	Total Cost	Target Value of Contract
Specification Improvements	C/CPFF	AME, Arlington, VA	N/A	0.500	Note 1	0.500	Note 1			Continuing	Cont.	N/A
Performance Based Specifications	C/CPFF	JJMA, Arlington, VA	Cont	0.773	Note 1	0.769	Note 1			Continuing	Cont.	N/A
CAD Development	C/CPFF	Misc	Cont.	N/A	N/A	N/A	N/A			0.0	N/A	N/A
Subtotal Product Development			Cont.	1.273		1.269				Continuing	Cont.	N/A
Remarks: Note 1. This is an existing level of effort contract which will be funded by tasks each FY.												
Subtotal Support				0		0		0				
Remarks:												

Cost Categories	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY99 Cost	FY99 Award Date	FY00 Cost	FY00 Award Date			Cost To Complete	Total Cost	Target Value of Contract
Subtotal T&E	N/A	N/A	0	0	N/A	0	N/A			0	0	0
Remarks												

Cost Categories	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY99 Cost	FY99 Award Date	FY00 Cost	FY00 Award Date			Cost To Complete	Total Cost	Target Value of Contract

Exhibit R-3, Project Cost Analysis			Date: February 1999
APPROPRIATION/BUDGET ACTIVITY RDT&E /BA 5	PROGRAM ELEMENT NAME AND NUMBER Ship Contract Design/Live Fire T&E PE 0604567N		PROJECT NAME AND NUMBER Live Fire Test and Evaluation/S2198

Subtotal Management	N/A	N/A	Cont.	0	N/A	0	N/A			Continuing	Cont.	Cont.
Remarks:												
Total Cost			Cont.	1.273		1.269				Continuing	Cont.	Cont.
Remarks:												

Exhibit R-2a, RDT&E Project Justification		Date: February 1999
APPROPRIATION/BUDGET ACTIVITY RDT&E /BA 5	PROGRAM ELEMENT NAME AND NUMBER Ship Contract Design/Live Fire T&E PE 0604567N	PROJECT NAME AND NUMBER LHA Replacement/S2465

Cost ($ in Millions)	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	Cost to Complete	Total Cost
Project Cost	0	0	0.008	0.012	0.016	0.021	0.026	0.030	Continuing	Continuing
RDT&E Articles Qty	0	0	0	0	0	0	0	0	N/A	N/A

A. Mission Description and Budget Item Justification: The five ships of the LHA 1 Class are scheduled to reach the end of their 35 year service life starting in 2011. Replacement ships are required to support amphibious operations.

The LHA 1 class is a multi purpose amphibious assault ship delivered to the Navy in the 1970's. The design merged the flight deck of an LPH and a vehicle and well deck of an LPD. The design allowed the use of helicopters and landing craft to conduct amphibious assault , from the ship that carried most of the Marines. As technology has evolved, new amphibious assault systems have been introduced into service (e.g. LCAC) which required the modification of the LHA design, resulting in the LHD 1 Class. New systems being developed require advances in ship capabilities. The MV-22 and the JSF are currently in development and , in order to fully integrate these systems, a ship with greater flight deck capability and improved stability is required. Future programs such as the CH-53E and AH-1W replacement aircraft will further stress current ship designs. As new USMC operational doctrine is developed such as OMFTS and Seabased logistics, the aviation mission requirements will grow.

Funding in line acts as placeholder for full funding which is expected during the budget process, after evaluation of the Development of Options study (expected to be complete by June 1999).

FY 1998: N/A

FY 1999: N/A

FY 2000 PLAN:

- ($ 0.008) Commence LHA Replacement design .

Exhibit R-2a, RDT&E Project Justification		Date: February 1999
APPROPRIATION/BUDGET ACTIVITY RDT&E /BA 5	PROGRAM ELEMENT NAME AND NUMBER Ship Contract Design/Live Fire T&E PE 0604567N	PROJECT NAME AND NUMBER LHA Replacement/S2465

B. Other Program Funding Summary

	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Complete	Total Cost
PE 0603563N Ship Concept Advanced Design	5.264	7.077	5.318	5.675	6.495	6,595	6.677	6.863	Continuing	Continuing
PE 0603564N Ship Preliminary Design & Feasibility Studies	17.721	8.929	12.012	17.000	33.015	37.359	7.859	0	Continuing	Continuing

C. Acquisition Strategy: The acquisition strategy will see a design competition in the early contract design phase (Phase I) with a down select to a single industry team for Phase II. Detail design and construction would be awarded to a single industry team. The new design strategy will depend on the final amount of available funding. In any case, the Navy will conduct an AOA and identify design requirements. Industry teams may then compete for the Phase I Contract Design with a down select for Phase II. The Detail Design and Construction could be awarded to that team or competed.

D. Schedule: The contract award is currently planned for a FY 05 award.

Exhibit R-3 Project Cost Analysis		Date: February 1999
APPROPRIATION/BUDGET ACTIVITY RDT&E /BA 5	PROGRAM ELEMENT NAME AND NUMBER Ship Contract Design/Live Fire T&E PE 0604567N	PROJECT NAME AND NUMBER LHA Replacement/S2465

Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY99 Cost	FY99 Award Date	FY00 Cost	FY00 Award Date			Cost To Complete	Total Cost	Target Value of Contract
Government Engineering	WR WR/PO	NSWC-CD Carderock, MD MISC	0 0	0 0	N/A N/A	0.000 0.00	N/A N/A			TBD TBD	TBD TBD	TBD TBD
Contractor Engineering	C	AME,Arlington,VA	0	0	N/A	0.000	N/A			TBD	TBD	TBD
Systems Engineering	TBD	TBD	0	0	N/A	0.000	N/A			TBD	TBD	TBD
Subtotal Product Development			0	0		0						
Remarks: Note 1. Existing contract.												
Subtotal Support			0	0		0						
Remarks:												
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY99 Cost	FY99 Award Date	FY00 Cost	FY00 Award Date			Cost To Complete	Total Cost	Target Value of Contract
Subtotal T&E	N/A	N/A	0	0	N/A	0	N/A			0	0	0
Remarks												
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY99 Cost	FY99 Award Date	FY00 Cost	FY00 Award Date			Cost To Complete	Total Cost	Target Value of Contract
Design Management Support	VAR	TBD	0	0	N/A	0.008	TBD			TBD	TBD	TBD
Subtotal Management	N/A	N/A	0	0	N/A	0.008	N/A			Continuing	Cont.	Cont.
Remarks:												
Total Cost			0	0		0.008				TBD	TBD	
Remarks:												

Exhibit R-2a,RDT&E Project Justification		Date: February 1999
APPROPRIATION/BUDGET ACTIVITY RDT&E /BA 5	PROGRAM ELEMENT NAME AND NUMBER Ship Contract Design/Live Fire T&E PE 0604567N	PROJECT NAME AND NUMBER Carrier Contract Design/42301

Cost ($ in Millions)	FY 1998*	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	Cost to Complete	Total Cost
Project Cost	32.949	38.215	34.866	39.248	26.358	24.649	26.539	28.386	Continuing	Continuing
RDT&E Articles Qty	0	0	0	0	0	0	0	0	N/A	N/A

A. Mission Description and Budget Item Justification: This project encompasses CVN 77 and CVN (X) Contract Design efforts. The traditional distinct phasing of the design process for aircraft carriers has been replaced with a continuous concurrent engineering regime incorporating the methodology, measurement, and management elements of the Navy's Integrated Product and Process Development (IPPD) process, extending it beyond contract award. Combat Systems integration will be design budgeted at contract award to allow further system development. This will ensure that the latest technologies are properly incorporated to accommodate the long design and build schedules typical of aircraft carriers. The IPPD process serves to maintain the focus of multi-discipline teams consisting of the government, shipbuilder, aviation programs, and suppliers. Government/Industry Integrated Product Team(s) (IPTs) utilize the IPPD process to develop the design in an Integrated Product and Data Environment (IPDE). The design approach is part of an acquisition strategy that is based on incorporating best available commercial practices and a phased technical definition.

The CVN 77 research and development investment identifies and validates transition technologies for incorporation into the CVN 77 design. These technologies will enhance shipboard workload reductions, reduce life cycle costs for CVN 77, provide benefits to the other nine ships of the NIMITZ class, and mitigate future risk for CVN (X). The pivotal investment area is transition technology insertion into, and the functional combining of, combat, command & control, communications, aviation, and intelligence systems into a cohesive integrated system. This effort will be herein referred to as Combat Systems Integration.

* Includes S2431

Exhibit R-2a,RDT&E Project Justification		Date: February 1999
APPROPRIATION/BUDGET ACTIVITY RDT&E /BA 5	PROGRAM ELEMENT NAME AND NUMBER Ship Contract Design/Live Fire T&E PE 0604567N	PROJECT NAME AND NUMBER Carrier Contract Design/42301

FY 1998 ACCOMPLISHMENTS: (includes S2431 funding)

- (U) ($11.749) Contract Design – Commenced resolution of design issues and update of the contract package including design drawings, and specifications in areas where near- term LLTM advanced purchase and early fabrication work may be impacted. The update accommodates changes to the ship, its systems and equipment necessitated by equipment obsolescence, operational need, and incorporation of newer systems/technology. Commenced IPPD/IPDE efforts.

- (U) ($ 2.500) Manpower and Material Support –Initiated efforts targeted at reducing both manpower support and ship maintenance costs. Initiatives include Advanced Food Preparation and Service Concepts; Adapting Commercial Ship Practices; Innovative Preservation (Corrosion Control) Systems, and Efficient Inventory and Configuration Management Systems.

- (U) ($ 1.000) Design Tools and Processes - Commenced initiatives to address improvements targeted at reducing the cost of design and changes. Initiatives include the development and improvement of computer design tools in addition to the establishment of an IPDE (Integrated Product Data Environment) which will reduce program cost by improving process time and decision making.

- (U) ($ 3.100) Hull, Mechanical, Electrical & Auxiliaries – Commenced initiatives to address improvements targeted at reducing the acquisition, operational and support costs of the hull, mechanical, electrical and auxiliary systems and equipment. Initiatives include: Waste Stream Management, Use of Electric Auxiliaries in lieu of Steam Driven Auxiliaries, Use of COTS Equipment, Improvements in the Compressed Air and Firemain Systems, and JP-5 Fuel System.

- (U) ($ 1.900) Combat and Intelligence Systems - Commenced initiatives to address improvements targeted at reducing the operational and support costs of the Combat and Intelligence Systems. Initiatives are focused on simplifying the design of the island through the use of multi “function” radars and embedded sensors, and improvements in Ship Navigation, Control, Intelligence and Communication Systems.

Exhibit R-2a,RDT&E Project Justification		Date: February 1999
APPROPRIATION/BUDGET ACTIVITY RDT&E /BA 5	PROGRAM ELEMENT NAME AND NUMBER Ship Contract Design/Live Fire T&E PE 0604567N	PROJECT NAME AND NUMBER Carrier Contract Design/42301

- (U) ($ 2.700) Aircraft Launch, Recovery & Support – Commenced initiatives to address improvements targeted at reducing the acquisition, and operational and support costs of the equipment and systems required to support the ship's aircraft. Initiatives include: Optimized CVN 68 Class Arresting Gear, Catapult Steam, and Accumulator Control System Modernization.

- (U) ($10.000) Propulsion and Electric Power Generation – Commenced evaluation and development of selected propulsion plant systems and components to reduce maintenance costs and manning requirements. Evaluated concepts for partial automation of the electric plant and developed preliminary hardware and software designs of instrumentation and control systems. Evaluated steam valves and actuators and started development of test plans to qualify a re-designed main steam stop (MSS) valve actuator. Evaluated potential changes to the purification system.

  FY 1999 PLAN: (Project Number change from S2301 to 42301)

- (U) ($0.818) Portion of extramural program is reserved for Small Business Innovation Research assessment in accordance with 15 USC 638.

- (U) ($12.231) Contract Design – Develop Contract Design package for ship award. Continue refinement of design issues and resolution of pending decisions on technology insertion or process changes with priority on near term advanced procurements and fabrication starts planned in FY00 and FY01. Efforts include further updates to the contract data package including design drawings and specifications. The updates accommodate changes to the ship, its systems, and equipment necessitated by equipment obsolescence, operational needs, and incorporation of newer systems/technologies. Continue IPPD/IPDE efforts. which will increase sortie generation rate. Commence efforts to reconfigure or redesign hangar bays to optimize movement, maintenance and storage of aircraft and associated aviation services. Commence Air Operations simulation efforts in support of topside/island design efforts.
- (U) ($16.166) Combat Systems Integration – Complete Phase I, Requirements Definition, by addressing improvements targeted at reducing operational and support costs of the ship's war fighting systems. Initiatives focus on reducing the number of systems through the use of "multi-function" radars and flat planar antenna arrays, data exchange across operational areas, data fusion, and integrated displays for operators. Complete functional requirement documents for command and control, weapons and sensors, external communications, mission planning, computing architecture, ship interface boundaries, and test and evaluation. Identify and commence trade studies intended to reduce cost without degrading operational performance. Commence Phase II; complete competitive solicitation for Combat Systems Integration concepts and design process. Evaluate proposals and commence competitive Combat Systems Integration design development.

Exhibit R-2a,RDT&E Project Justification		Date: February 1999
APPROPRIATION/BUDGET ACTIVITY RDT&E /BA 5	PROGRAM ELEMENT NAME AND NUMBER Ship Contract Design/Live Fire T&E PE 0604567N	PROJECT NAME AND NUMBER Carrier Contract Design/42301

- (U) ($9.000) Propulsion and Electric Power Generation – Evaluate the consolidated throttle control concept and design the remote electric plant control panel (EPCP). Test preliminary models of a pressurizer control system and begin development. Complete testing and qualify the MSS valve actuators. Begin re-design of purification system to reduce maintenance costs.

FY 2000 PLAN:

- (U) ($13.200) Contract Design – This effort completes remaining required updates to the contract package necessary to support advanced procurement/advanced construction, and continues the contract design effort to support full construction. The update accommodates changes to the ship, its systems, and equipment necessitated by equipment obsolescence, operational need, and incorporation of newer systems/technology. Continue IPPD/IPDE efforts.

- (U) ($11.666) Combat Systems Integration – Complete Phase II competitive solicitation for Combat Systems Integration concepts and design process. Continue monitoring improvements targeted at reducing the operational and support costs of the ship's war fighting systems. Initiatives remain focused on reducing the number of systems through the use of "multi-function" radars and flat planar antenna arrays, data exchange across operational areas, data fusion, and integrated displays for operators. Complete trade studies, including those that result in cost reductions without degrading operational performance into the design development. Evaluate and complete competitive Combat Systems Integration design development and integrate into the ship contract data package. Commence Phase III Design Refinement. Refine Combat Systems Integration design and integrate into the ship design.

- (U) ($10.000) Propulsion and Electric Power Generation – Develop validation models for consolidated throttle control and remote EPCP and begin testing. Continue development of the pressurizer control system. Complete development of a re-designed purification system and begin testing. Begin development of updated detectors and valve control system to accommodate generic instrumentation.

B. Other Program Funding Summary

	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Complete	Total Cost
PE 0603563NShip Concept Advanced Design	5.264	7.077	5.318	5.675	6.495	6,595	6.677	6.863	Continuing	Continuing

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PE 0603512N/42208 Carrier Systems Development (formerly 22208)									
15.020	19.384	111.694	115.039	130.171	56.814	62.909	57.735	Continuing	Continuing
PE 0603512N/S2693 Carrier Systems Definition (formerly PE 0603564N/42208)									
31.124	35.159	24.665	14.546	13.278	0	0	0	Continuing	Continuing
PE 0603512N/42678 Carrier Technology Insertion									
	49.885	0	0	0	0	0	0	0	49.885
BLI 200100 Carrier Replacement Program									
48.737	123.665	751.540	3,950.576	147.615	434.183	1,337.250	131.533	Continuing	Continuing

C. Acquisition Strategy: The Carrier acquisition strategy is that CVN 77 and follow-on hulls will be acquired/managed using a phased technology insertion or "evolutionary" strategy. Technologies will include island redesign (topside) with multi function and volume search radars, as well as other technologies which will reduce total ownership costs on CVN 77 and the previous nine ships of the NIMITZ class, while mitigating risk for CVNX. As with past NIMITZ class carriers, the CVN 77 will be awarded as a sole source FPIF contract to Newport News Shipbuilding

D. Schedule:
Program Milestones CVN 68 Class has been approved at Milestone III

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Engineering Milestones	CVN 68 Class has been approved at Milestone III
T&E Milestones	CVN 68 Class has been approved at Milestone III
Contract Milestones	CVN 68 Class has been approved at Milestone III

Exhibit R-3, Project Cost Analysis		Date: February 1999
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Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY99 Cost	FY99 Award Date	FY00 Cost	FY00 Award Date			Cost To Complete	Total Cost	Target Value of Contract
Product Development	PR, SS, CPAF (existing)	NEWPORT NEWS SHIPBUILDING NEWPORT NEWS, VA	8.800	8.753	1/99	11.125	11/99			Cont.	Cont.	Cont.
	SS,CPFF	BETTIS ATOMIC POWER LAB PITTSBURG, PA	10.000	9.000	11/98	10.000	11/99			14.000	43.000	43.000
	WR	NAWC LAKEHURST. NJ	2.072	2.392	1/99	2.110	11/99			Cont.	Cont.	Cont.
	WR	NSWC DAHLGREN, VA	1.238	3.287	1/99	2.760	11/99			Cont.	Cont.	Cont.
	WR	NSWC CARDEROCK MD	.536	2.065	11/98	1.370	11/99			Cont.	Cont.	Cont.
	PD	SPAWAR SAN DIEGO CA	0.00	2.056	1/99	2.138	1/00			Cont.	Cont.	Cont.
	GSA	AME ARLINGTON VA	1.799	1.890	1/99	1.218	1/00			Cont.	Cont.	Cont.
	Various	MISC (under $1M)	8.504	8.772	11/98 - 2/99	4.145	11/99-2/00			Cont.	Cont.	Cont.
Subtotal Product Development			32.949	38.215		34.866						
Subtotal Support	N/A											
Subtotal Test and Evaluation	N/A											
Subtotal Management	N/A											

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Government Furnished Property	N/A											
Total			32.949	38.215		34.866				Cont.	Cont.	Cont.